

*Master Thesis****Gender-caused Effects in Automated Information Technology Labor Market:
How the internet is being used to search for employment?*****Abstract**

This paper will examine the use of internet by job seekers. More specifically, this study explores the frequency (how often) the job seekers use a home-based internet system to search for employment.

The study will use the difference in means analysis to assess the use of internet for job searching among four categories of fathers, mothers, single fathers and single mothers; between the ages of 18 – 64 years old; with access to internet at home; and with some college education. I used the data from a “Pew Internet Project Survey” conducted from 2,259 Internet users between March 1 through May 19 2002. I constructed a data set that address the following task: What is the mean difference between mothers, fathers, single mothers and single fathers who use a home-based internet to search for jobs, and their respected significance. This data set caught my attention because the groups, the type data and questions and the intent were the elements that I was interested in for certain policy analysis.

Results suggest that the difference in means between fathers, single fathers, and single mothers is not significant, but the difference in means for the mothers is significant suggesting that a higher education level in mothers may afford a small advantage. The result will be important for policy makers to assess the role of public access to internet for those looking for employments, specifically single parents. This study does not verify the rate of success, the type of jobs, and the location for employment.

Originality/value – many articles have addressed web-searching in general. This paper, however, provides some insights on how a specific category of society searches for job using their home-based internet facility.

I. Introduction

During the past two decades the web has significantly transformed the product and the labor market to a highly sophisticated, yet efficient level. Such transformation has altered the way workers search for jobs and the way firms hire employees. Despite a spectacular growth of job-search sites— from 2000 sites in 1998 to over 100,000 in 2009¹— little is known about the on-line job searches or direct employee-initiated contacts with potential employer Paul DiMaggio (DiMaggio, Hargittai, Neuman, & Robinson, 2001) refers to

¹ Source: Consumer Search @ <http://www.consumersearch.com/job-sites>
Accessed on March 2010

Internet as “The electronic network of interworks that links people and information through computers and other digital devices allowing person-to-person communications and information retrieval”. Even though internet technology was invented in 1940s for, and by, the Department of Defense for military applications, it first found its way into the military community in 1975 and gradually emerged in scientific and commercial environment in 1982, and almost explosively penetrated in public domain in 1990s when Graphical User Interface (GUI) became widely available to all end users (Abbate, 1999), (Castells, 2001).

Social theorists of 1960s discussed the postindustrial information society and foresaw replacement of ‘industrial society’ with ‘information society’ (Machlup, 1962). They described this transformation as a paradigm shift in the way the civil societies interact. A comparative analysis of the world internet usage between December of 2000 and December of 2009 at macro level can testify to this fact:

WORLD INTERNET USAGE AND POPULATION STATISTICS						
World Regions	Population (2009 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2009	Users % of Table
Africa	991,002,342	4,514,400	86,217,900	8.7 %	1,809.8 %	4.8 %
Asia	3,808,070,503	114,304,000	764,435,900	20.1 %	568.8 %	42.4 %
Europe	803,850,858	105,096,093	425,773,571	53.0 %	305.1 %	23.6 %
Middle East	202,687,005	3,284,800	58,309,546	28.8 %	1,675.1 %	3.2 %
North America	340,831,831	108,096,800	259,561,000	76.2 %	140.1 %	14.4 %
Latin America/Caribbean	586,662,468	18,068,919	186,922,050	31.9 %	934.5 %	10.4 %
Oceania / Australia	34,700,201	7,620,480	21,110,490	60.8 %	177.0 %	1.2 %
WORLD TOTAL	6,767,805,208	360,985,492	1,802,330,457	26.6 %	399.3 %	100.0 %
INTERNET USAGE STATISTICS						

Table 1: The Internet Big Picture, World Internet Users and Population Stats,
Copyright © 2001 - 2010, Miniwatts Marketing Group
Source: Internet World Stats, <http://www.internetworldstats.com/stats.htm>

The interesting phenomenon of table 1 is the astronomical rate of growth in internet usage in the developing countries. Africa with an impressive rate of 1800% growth rate followed by Middle East (1600%) and Latin America/Caribbean with 935% indicate a rapid rate of internet penetration in societies, public and private sector, as a result of technology leapfrogging².

A daily tracking survey on the America use of internet³, conducted by Princeton Survey Research Associate International between November 30 and December 27, 2007 revealed

² Internet World Stats.
<http://www.internetworldstats.com/stats.htm>

³ “This report is based on the findings of a daily tracking survey on Americans' use of the internet. The results in this report are based on data from telephone interviews conducted by Princeton Survey Research Associates International between November 30 and

that “74% of American adults (ages 18 and older) use the internet, 60% of American adults use broadband connections at home, and 55% of American adults connect to the internet wirelessly, either through a WiFi or WiMax connection via their laptops or through their handheld device like a smart phone. This figure did not change in a statistically significant way during 2009”.

In such a dynamic ‘e-commerce’-booming environment, a great deal of attention has been paid to the influence of internet in transforming labor market, among other changes (Kuhn & Skuterud, 2000). There is also a great deal of assessments, literatures— and disagreements— concerning the effect of internet use in searching for employment. Some researchers have concluded that the trend for using internet to look for employment is increasing among all social categories while others indicate that internet is simply used as social vehicle to gain social capital, build connection with others, gain knowledge about the environment, but is not being used as a tool for seeking employment (Frances & Pöysti, 2003).

The purpose of this paper is to examine the use of internet by job seekers. More specifically, this study explores the frequency (how often) the job seekers use a home-based internet system to search for employment. Using the conceptual chain of causality in the highly competitive global labor market which has profoundly influenced by the Information Technology and shaken by the current financial situation, the result will be important for policy makers to assess the role of Information and Communications Technologies in human networking, therefore facilitating public access to internet for those looking for employments.

II. Literature Review

Most studies in the literature have focused the role of information in the labor market for both employee and employers, the influence of a general purpose Information and communications Technology (ICT) system for accessing and propagating this information and the economics of the available information. These studies generally confirm that availability and accessibility to information in the labor market enhances the growth of labor market, increases the chances for employee to find the right opportunity and assist firms to find the most qualified individual.

My personal observation and experience supports Peter Kuhn’s (Kuhn & Skuterud, 2000) suggestion that internet job search is higher among persons who are in the job force, compared to those who are either retired or out of job force. His research reveals that “most internet job search occurs from home” and among the employed persons looking

December 27, 2009, among a sample of 2,258 adults, age 18 and older. Interviews were conducted in both English (n=2,197) and Spanish (n=61). For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is plus or minus 2.4 percentage points. For results based internet users (n=1,676), the margin of sampling error is plus or minus 2.8 percentage points. In addition to sampling error, question wording and practical difficulties in conducting telephone surveys may introduce some error or bias into the findings of opinion polls.

Source: <http://pewinternet.org/Reports/2010/Internet-broadband-and-cell-phone-statistics/Methodology/Methodology.aspx?r=1>

Note: The author neither conducted the survey nor tabulated the data. All analysis is conducted by the Pew internet.

for job, only 32 percent use out-of-home sites to conduct their search; and among the ‘unemployed jobseekers’ who do not have access to employers systems 70 percent used home units (P.4). This ratio, as he suggested, stayed high regardless of the reason for unemployment.

David Autor (Autor, 2001) argues that internet will influence labor market in three different ways; the way employees-employers matches; the method of delivering services by the employee; and demographical issue related to either employee or employer.

According to report released by pew Internet⁴, 52 million Americans used internet to search for jobs. This figure represented a 60% increase compared to a similar report conducted two years before. On a daily basis 4 million people use the net searching for employment, a 33% increase compared to two year before. 60% of internet users are between the ages 18-29; 42% are between then ages 30-49; and 27% are between the ages 50-64.

A research conducted by the Bureau of Labor Statistics⁵ regarding the “Methods of Internet job searching”, revealed that “Reading on-line ads or job listings (92.6 percent of Internet jobseekers) was the most common Internet job search method between January and October 2003”. 70.2 percent of jobseekers used internet to search for information on employees, 57 percent submitted their resumes through internet, and 41 percent used internet to post their application and resume for jobs.

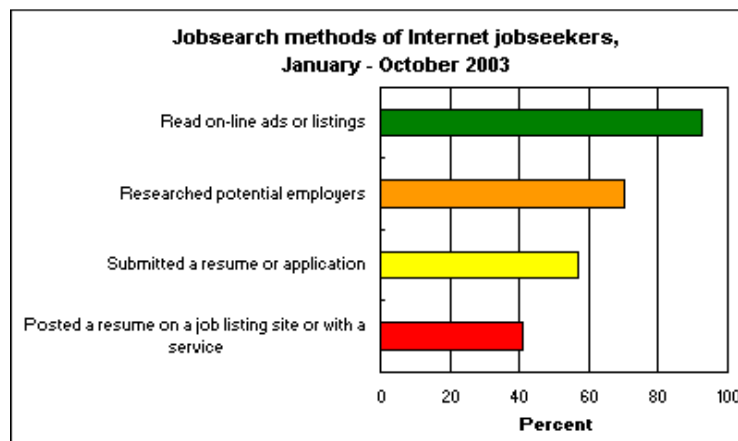


Table 2: Source: United States Department of Labor; Bureau of Labor Statistics

Pissarides in his ‘market search theory’ argued that internet will result in “lowering the cost of job search” which eventually leads in “increase productivity”. He argues that a better match could result in higher job satisfaction which will have direct impact of increase in quality, output, workers earning and better profit for the firm (Pissarides, 2000).

⁴ Recruiters Network, Employment Recruiting Related stats.
Source: <http://www.recruitersnetwork.com/poll/stats.htm>

⁵ Source: United States Department of Labor; Bureau of Labor Statistics.
<http://www.bls.gov/opub/ted/2005/aug/wk3/art02.htm>

Stigler maintains that regardless of specialization and knowledge of worker, he can never be able to acquire complete information about “the perspective earnings which [he] would [be able to] obtain from everyone of these potential employers at any given time, let alone keep his information up to date” (Stigler, 1962). This argument, although presented in 1962 when internet was an unknown factor in our society, is still valid. However, with the advent of internet and its application in the current market, the chance of obtaining better and more accurate information has significantly increased.

I certainly dispute Christine Fountain’s assertion that challenges the efficiency of internet as an effective media to “make the matching process [between employer and employee] more efficient”. She points to the “trade-off between Quality and Quantity of Information” and argues that “internet contribution to an unemployed searcher’s information pool may afford a small advantage only to the extent that other job searchers are not using it” (Fountain, 2005). Availability and accessibility of information provides job seekers and employers a higher quality information to make their decision, therefore, reduces the chances of hiring a wrong person for a job or denying a qualified person for a position.

Halaby considers information obtained from internet as only one of the important factors to successfully find a job. He argues that searchers must carefully consider a mix of other elements such as “preferences, skills, resources, time and social/human capital” to strategize their searches. He recommends that other activities such as “reading, answering, and placing advertisement; consulting firm’s vacant job postings; using public and private employment agencies; attending job fairs; and filling out and delivering unsolicited resumes’ should be a part of their efforts (Halaby, 1988).

Job search Approaches: On-line versus traditional⁶

Bureau of Labor Statistics provides following guidelines as the most prevalent methods of job-searching⁷:

- **Personal contacts:** This is one of the important components discussed in social capital. According to the latest survey, over 95 percent of jobs are not posted under the current economic condition. Therefore, personal contact, or personal networking, has always been a major contributing factor in job searching.
- **School career planning and placement offices:** Educational institutions often provide services for career planning for their graduates. “Most also offer career counseling, career testing, and job search advice. Some have career resource libraries; host workshops on job search strategy, resume writing, letter writing, and effective interviewing; critique drafts of resumes; conduct mock interviews; and sponsor job fairs”.

⁶ I was inspired by the paper written by Peter Kuhn (October, 2000), titled: Job searched methods: Internet versus Traditional. I have used some of his approach, content, and methodology for this section of my paper.

⁷ Bureau of Labor Statistics. Occupational Outlook Handbook, 2010 – 2011 Edition
Source: <http://www.bls.gov/oco/oco20042.htm>

- **Employers:** Labor department suggest that “directly contacting employers is one of the most successful means of job hunting”. However, under such dynamic labor environment, finding the employer and being able to directly contacting them is a challenge for anyone.
- **Classified ads:** This news paper version of this approach is rapidly becoming obsolete and is being replaced by Internet. The Bureau recommends the following points when answering the classified ads or the traditional "Help Wanted" ads in newspapers:
Follow all leads to find a job, do not rely solely on the classifieds.
Answer ads promptly, because openings may be filled quickly, even before the ad stops appearing in the paper.
Read the ads every day, particularly the Sunday edition, which usually includes the most listings.
Keep a record of all ads to which you have responded, including the specific skills, educational background, and personal qualifications required for the position. You may want to follow up on your initial inquiry.
- **Internet resources:** This method by far is the most dominant approach in the age of Internet. Searching for jobs using special “keywords” and posting resume simultaneously is the norm for many in the job market. Special internet forums, online discussion groups, and message boards have added to the complexity of job hunting. Internet has also removed the barrier of time and space by allowing individuals and firms connect with each other from much different part of world. It is no longer unusual for someone from Lagrange Georgia to find employment in Kuwait.
- **Professional associations:** These entities offer assistance in the area of “career planning, educational programs, job listings, and job placement”.
- **Labor unions:** Labor Union is a reliable source to receive job-related information. However, they are limited to certain jobs and certain geographic area.
- **State employment service offices:** State employment service office is a part of the U.S. Department of Labor’s Employment and Training Administration which attempts to match firms with job-searchers.
- **Federal Government:** Provides “information on obtaining a position with the Federal Government is available from the U.S. Office of Personnel Management (OPM) through USAJOBS, the Federal Government’s official employment information system”
- **Community agencies:** “Many nonprofit organizations, including religious institutions and vocational rehabilitation agencies, offer counseling, career development, and job placement services, generally targeted to a particular group, such as women, youths, minorities, ex-offenders, or older workers”.
- **Private employment agencies and career consultants:** Private placement entities provide special services by gathering accurate information about the available vacancies in the companies. As a part of their services, they often conduct the initial screening for candidates for a faster and more accurate recruitment. This is a fee-based service.
- **Internships:** Internship is a viable option for mostly college graduates.

The most effective tactics by job-seekers, according to a research by Society for Human Research Management (SHRM)⁸ is internet followed by personal contact.

Internet job postings	96%
Personal contact/networking	95%
Ads in newspapers	95%
Employee referrals/Employee referral program	92%
Online or Web site job applications	90%

Society for Human research Management (SHRM).
Source: <http://www.shrm.org/Pages/default.aspx>

Surprisingly, the success ratio of each method is different from the chart and indicates that personal contact and networking (an important ingredient is the leading factor in a successful job searching:

Personal contact/networking	78%
Internet job postings	48%
Employee referrals/Employee referral program	65%
Headhunters	45%
Ads in newspapers	30%

Society for Human research Management (SHRM).
Source: <http://www.shrm.org/Pages/default.aspx>

Internet job search is most widespread among the unemployed, and lower among individuals who are out of labor force, compared to those who are employed or still active in the labor force. Regardless of labor force status, most internet job search occurs from home. Only 32% of employed people who were actively searching for job online used a 'non-home' internet. "Even though unemployed job seekers do not have the option of accessing the internet from a workplace, 30 percent of this group used a non-home site as well" (Kuhn, 2000, P.4). According to the same report, "regardless of reason for unemployment, most internet search occurs from home". The policy implication of this search is important from the stand point of public access from home-based internet. The report concludes that "given access from home, 82 percent of employed persons, and 84 percent of unemployed jobseekers actually use the internet from home". The next higher category in the report, 45 percent, is identified those who used 'someone else's computer' which refers internet connections at libraries, schools and colleges to search for jobs. Public employment agencies had a smaller role in providing internet connection for jobseekers compared with other 'informal social networks, such as someone else's computer" (P.5).

⁸ Society for Human research Management (SHRM).
Source: <http://www.shrm.org/Pages/default.aspx>

Quality versus Quantity of information in searching for job in the Internet:

The debate concerning the trade-off between “Quality Versus Quantity of Information” in the internet has created a new concept of ‘data pollution’, referring to the unprecedented amount of data in the information superhighway. The process of identifying qualified employee and/or identifying requirements of jobs is now overwhelmed by the complexity related to matching employee with employer, due to excessive information (Granovetter, 1981). A crucial element of such matching process is the availability of accurate information which is important to both employee and employer (Sorensen & Kallberg, 1981).

The daily expansion of online information related to jobs has created problem for both applicants and recruiters. As the jobseekers spent long period of times to search through thousands of postings, job boards, and listings, so must the employers spend equal time, if not more, to plow through thousands of applications to screen for qualified employees. Finding a balance to handle this process more efficiently, and less costly, is important not only for recruiter but to jobseekers too (Fountain, 2005).

There is a positive correlation between the price of accessing information and the number of jobs a jobseeker may search for to find a suitable position. In other words, when the price of accessing information to vacant jobs is low, the jobseekers will consider more potential job opportunity and consequently will either find a better job or simply finds a job. This can result in increase in productivity, assuming that the individual has been able to find his/her desired position, better wages, due to higher firm’s profitability, and higher rate of return to the society, due to higher job opportunity (McCall, 1970). Regardless of the availability of information, however, there is a certain degree of risk for employer. The firm may chose a less qualified employee and/or reject the best qualified individual. In the case of former scenario, the loss to the firm can be substantial, considering the loss of productivity as a result of hiring the less qualified employee and the cost of screening, hiring, and training (Spence, 1973).

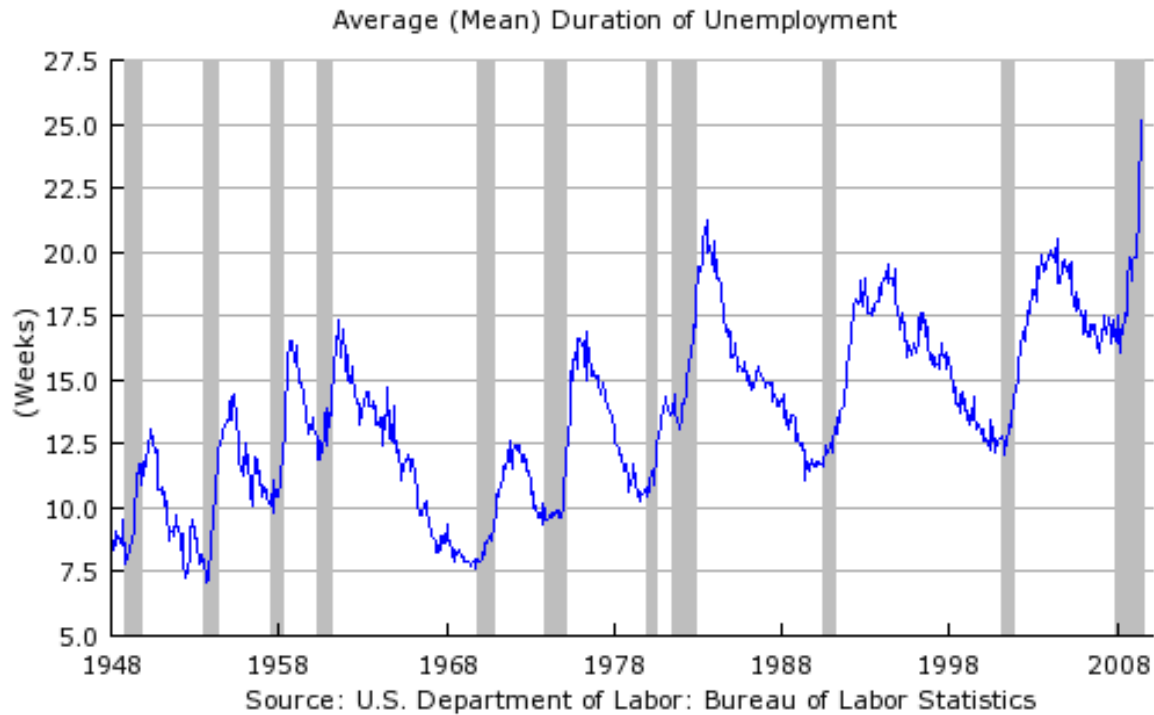
In theory, internet is a viable source of information for both employer and employee. However, if the information fails to create the best match between the jobsearcher and recruiter, than the information has not served its purpose. One way to strengthen this weakness, is to use internet to enhance our social capital by other groups outside our primary group who can create a bridge between us and a wide network of other resources (Granovetter, 1981).

Will Internet shorten the search time?

There is not any viable research to answer this question accurately. Kuhn and Skuterud (Kuhn & Skuterud, 2004) argue that “internet job search is more common among workers with observed characteristics that are usually associated with faster reemployment”. They further argue that if they “hold these observed characteristics constant, unemployment duration are not shorter, and possibly even longer among workers who look for work online than among workers who do not”. The downfall of Kuhn and other similar research about the duration of unemployment is the fact that they fail to consider other

significant factors such as economic situation, unemployment rate, local economic conditions and the regional economic influences. For example, the current duration of unemployment is 30.2 weeks due to 9.7 percent nationwide unemployment rate⁹.

The following chart depicts the average duration of unemployment since 1948. The upward trend, especially in early to mid 1980s, indicates that other factors played a more important role in unemployment duration. “The latest data is for July 2009 at 25.1 weeks - in other words, almost 6 months”. This chart supports Kuhn conclusion that internet minimum, if any, effect on the duration of unemployment¹⁰.



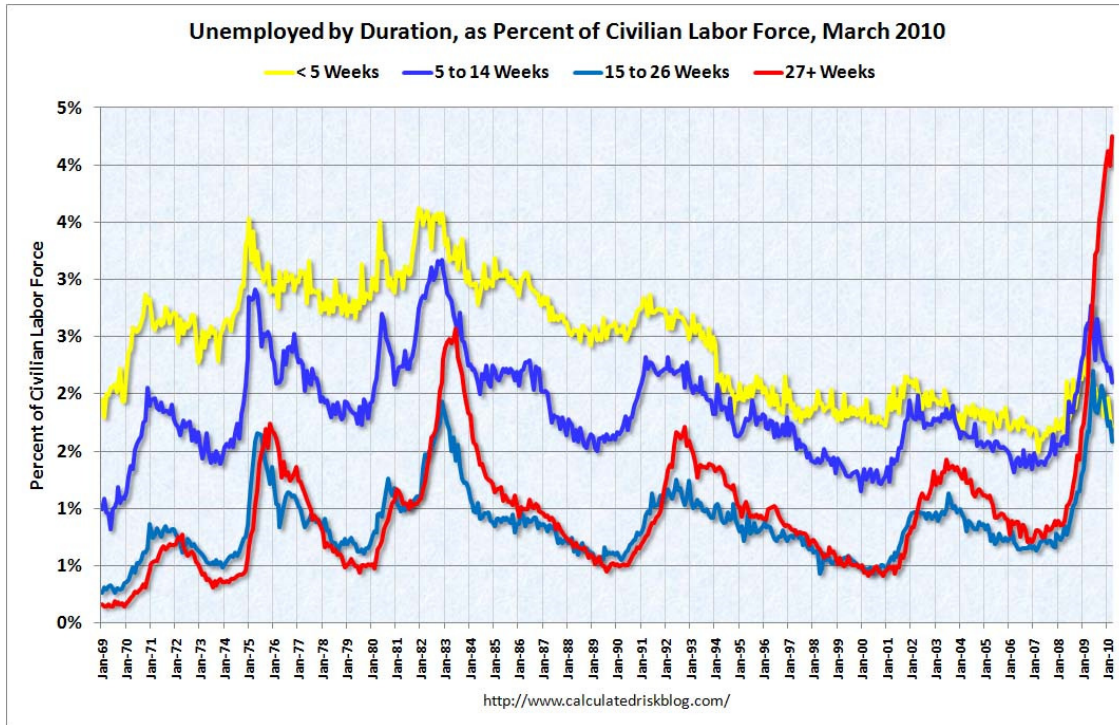
Source: Traders narrative; Really Scary Chart: Duration of Unemployment.

The following graph, which depicts the duration of unemployment as a percent of the civilian labor force from 1969 through January 2010, again suggests that internet plays a minimum role, if any, in duration of unemployment. “The graph shows the number of unemployed in four categories as provided: less than 5 week, 6 to 14 weeks, 15 to 26 weeks, and 27 weeks or more”. The graph also indicates a higher rate of turnover in the ’70s and ’80s, perhaps due to “a more careful hiring practices or changes in demographics or maybe other reasons”¹¹.

⁹ Countdown to a new job...211 days. CNN Money, February 5, 2010.
http://money.cnn.com/2010/02/05/news/economy/enemployment_durationin/

¹⁰ Source: Traders narrative; Really Scary Chart: Duration of Unemployment.
<http://www.tradersnarrative.com/really-scary-chart-duration-of-unemployment-2841.html>

¹¹ Source:
 Business News online. Marketing & Economics & Finance & International & Loans.
<http://business.techwoo.com/economics/2010/04/03/unemployment-rates-and-duration-of-unemployment/>



Source: Business News inline. Marketing & Economics & Finance & International & Loans.

III. Methodology

Although there is little research regarding the use of internet for job searches, “there is a growing body of literature that examines how people in general search on the web” (Janson, Jansen, & Spink, 2005), (Holscher & Strube, 2000), (Jansen & Pooch, 2001), (Spink, Jansen, Wolfram, & Saracevic, 2002). These researchers have concluded that the trend for using internet to look for employment is increasing among all social categories while others indicate that internet is simply used as a social vehicle to gain social capital, build connection with others, gain knowledge about the environment, but is not being used in a limited capacity as a tool for seeking employment (Kuhn & Skuterud, 2004).

This paper is will examine the use of internet by job seekers. More specifically, this study explores the frequency (how often) the job seekers use a home-based internet system to search for employment.

This study will use the difference in means analysis to assess the use of internet among married males and females (fathers & mothers) and single males and females (mothers and fathers) between the ages of 18 – 64 years old; with access to internet at home; and with some college education. This study does not verify the rate of success, the type of jobs, and the location for employment.

Description of datasets and method:

Datasets:

The research question will look at those who most likely conduct online searches for jobs. To test my hypothesis about the use of internet to search for employment, I used the data from a survey in 2002 by the pew internet. These figures come from a Pew Internet Project survey of 2,259 Internet users that was conducted from March 1 through May 19, 2002. The margin of error is plus or minus two percentage points, according to the research. I constructed a data set that address the following task: What is the mean difference between mothers, fathers, single mothers and single fathers who use internet to search for jobs, and their respected significance. This data set caught my attention because the groups, the questions and the intent were the elements that I was interested for certain policy assessment.

For the purpose of this study, the selected group is married males and females (fathers & mothers) and single males and females. The age category of this group is 30-49 with some college education.

Causal Relationship:

Internal validity:

Internal validity establishes a causal relationship. The key question in internal validity is what caused the change, causality. In this case, what are the characteristics people between the working ages of 16 through the retirement age of 65 who uses internet to look for jobs?

There are also “alternative causes or threats” that can impact this research, but not considered or measured in my analysis. If these causes are not identified, they can prevent the analysis to establish the real causality (causal relationship). For example, I am looking at how many people typically look for jobs on internet. What age category they are, what gender, income and educational level, culture, etc. One of the threats in my research might be “the single group threats”. This study focuses on job seekers mainly between the ages of 16 to 65. The impact (comparison) of other age groups could be significant in my assessment. Income, computer literacy, education, parent education, gender, country of origin, can all be the other threats to the internal validity.

One other factor that this paper did not included in its calculation, but I was aware of its existence, was the peer pressure, imitation, and copy cat. If my colleagues searched and applied for a job on line, then I should do the same.

The internal validity that I believe is not present is the type of computer system, (MAC vs. PC), type of operating system, applications, type of access (modem or DSL), and the type of job an individual is looking for.

External validity

For external validity (generalization), the author want to be able to see to what extent the conclusions in this study can be generalized and can be hold for other persons, in other places, and at other times.

A major threat to the external validity is the “social network or degree of social capital” that people might have. The more individuals you know, the more networks you have in the community or the society you live in, the less you would need search for jobs on line. Another threat to the external validity of this research is the fact that it cannot be generalized to other age group. My focus age group is the age of 16 to 65 years old. Even though the legal working age in the U.S. is 16, but there are still a group of people who start working prior to their legal age. The same logic is applicable to those over the age of retirement (65) who may chose to stay active in the job market.

Access to technology can also be another threat. There are still lots of people who have a very limited access to computer and internet. Since the target population of this project is the residents of the United States, therefore, the results cannot be generalized to other populations who live outside the U.S. Social culture and cultural background is another

threat to the external validity of my research. In certain cultures you can only get a job by referral or physical presence.

The only threat that does not exist in my external validity assessment is the element of time. Access to internet or searching for job online is no longer time restricted, and a job seeker can send his/her resume practically anytime to perspective employers.

Methods:

Differences in Means Analysis:

Differences of means analysis is commonly used when we conduct a study involving two groups by comparing two or more sample means between or across a group. The basic empirical strategy involves several steps including; calculating the mean or proportion and standard deviation for each group; calculating the standard error of the mean or proportion estimate for each group; calculating an overall standard error for the groups and computing a t score and find its associated probability (Meier, 2012). This study will also applies the t test assuming independent samples with unequal variances because the conservative nature of this particular statistical technique due to the fact that it reliably provides larger overall standard errors than the other two t tests — The t test assuming independent samples with equal variances and the Levene test examining equal sample variances. In this case, this study is interested in gathering information about two populations in order to compare them. As in statistical inference for one population parameter, confidence intervals and test of significance are useful statistical tools for the difference between two population parameters.

This technique allows us to know whether the values measured for one sample are different from those of other sample on average. This analytical tool explores questions like is the average use of internet by single mothers significantly greater than single fathers? Or does level of education between married or single parents makes any difference in using internet? These questions require that we calculate two means and compare them to see if one is greater than other and by how much? It is much more common for a researcher to be interested in the difference between means than in the specific values of the means themselves.

This research will make the following three assumptions:

1. The two populations have the same variance (homogeneity of variance).
2. The populations are normally distributed.
3. Each value is sampled independently from each other value. That means each subject provides only one value. In cases where a subject provides more than one score, then the scores are not considered to be independent.

Based on the literature reviews concerning the use of internet for searching employment, this study hypothesizes that the difference in means between married and unmarried male and unmarried female is not significant. However, the difference in means for the married

female is significant. The result will be important for policy makers to assess, and facilitate, the role of public access to internet for those looking for employments.

IV. Results:

Internet is perceived as the future fabric of human interaction which will create the culture of its own in building social capital, facilitate cooperation and coordination, and glues the communities together (Putnam, 1995b). Even though there is a wide range of disagreements as how internet restructures human interaction in economics and personal relation, there is very little doubt that the change is inevitable.

According to the World Bank, internet will be a major tool for developing human capital in both developing and developed countries and will enhance the social capital in both environments. Same report also praises the role of internet in democratization of society, advancement of human rights, improvement of economical condition and welfare of its members, and expansion of labor market (Bank, 2004).

The result of the analysis of the differences in means and the related significance suggest some issues that might worth further investigation and research (table 1 & 2).

Table 1

Fathers:

<i>Fathers</i>	<i>Mean</i>	<i>N</i>	<i>Std. Deviation</i>	<i>Std. Error of Mean</i>	<i>Variance</i>
<i>NO</i>	2.75	2992	1.494	.027	2.231
<i>Yes</i>	2.67	698	1.409	.053	1.985
<i>Total</i>	2.74	3689	1.478	.024	2.185
<i>Fathers</i>	<i>Sum of Sq</i>		<i>df</i>	<i>M. Square</i>	<i>F</i>
<i>Between</i>	3.738		1	3.738	1.711
<i>Group(Combined)</i>					.191

Mothers:

<i>Mothers</i>	<i>Mean</i>	<i>N</i>	<i>Std. Deviation</i>	<i>Std. Error of Mean</i>	<i>Variance</i>
<i>NO</i>	2.68	2842	1.491	.028	2.223
<i>Yes</i>	2.95	848	1.416	.049	2.004
<i>Total</i>	2.74	3689	1.478	.024	2.185
<i>Mothers</i>	<i>Sum of Sq</i>		<i>df</i>	<i>M. Square</i>	<i>F</i>
<i>Between</i>	47.275		1	47.275	21.764
<i>Group(Combined)</i>					.0

Single father:

<i>Fathers</i>	<i>Mean</i>	<i>N</i>	<i>Std. Deviation</i>	<i>Std. Error of Mean</i>		<i>Variance</i>
<i>NO</i>	2.74	3588	1.474	.025		2.174
<i>Yes</i>	2.69	101	1.609	.160		2.588
<i>Total</i>	2.74	3689	1.478	.024		2.185
<i>Fathers</i>		<i>Sum of Sq</i>	<i>df</i>	<i>M. Square</i>	<i>F</i>	<i>Sig</i>
<i>Between Group(Combined)</i>		.242	1	.242	.111	.739

Single mother:

Mothers	Mean	N	Std. Deviation	Std. Error of Mean	Variance
NO	2.73	3488	1.476	.025	2.179
Yes	2.82	202	1.514	.107	2.293
Total	2.74	3689	1.478	.024	2.185
Mothers		Sum of Sq	df	M. Square	F
Between Group(Combined)		1.286	1	1.286	.589
					.443

Table 1: Calculation of mean, Std. deviation, Std Errors, and variance.

Table 2

<i>Cat.</i>	<i>Mean No</i>	<i>Mean Yes</i>	<i>Dif Mean</i>	<i>N/N O</i>	<i>N/Yes</i>	<i>MSE</i>	<i>Harmonic Mean of Sample Size</i>	<i>Std. Deviation of Dif Mean</i>	<i>t-statistic of Dif Mean</i>
<i>Father</i>	2.75	2.67	0.08	2992	698	3.738	1131.933	0.081269	0.984387
<i>Mother s</i>	2.68	2.95	-0.27	2842	848	47.275	1306.242	0.269041	-1.0033563
<i>S. Fathers</i>	2.74	2.69	0.05	3588	101	0.242	196.4695	0.049634	1.007384
<i>S. Mother s</i>	2.73	2.82	-0.09	3488	202	1.286	381.884	0.082067	-1.096662

Table 2: Calculation of mean, Dif. Mean, Harmonic Mean of Sample Size, Std. Deviation of Dif Mean, t-statistic of Dif Mean

In this analysis we have four samples. The purpose of evaluation is to determine whether the values measured for one sample are different from other samples on average.

	<u>Age group</u>		
	<u>Mean</u>	<u>N</u>	<u>MSE</u>
18-29	2.67	1024	18.1
30-49	2.79	1766	
50-64	2.71	649	
65+	2.4	170	
D/K	3.48	79	
Dif			
Mean	-0.81		
Harmonic Mean of Sample Size			146.6835902
Standard Deviation of Dif Mean			0.496779333
t-statistic of Dif Mean			-1.630502613

The following tables shows that the difference in means in married and single males (fathers), and single females (mothers) is not significant.

	<u>Fathers</u>		
	<u>Mean</u>	<u>N</u>	<u>MSE</u>
No	2.75	2992	3.738
Yes	2.67	698	
Dif			
Mean	0.08		
Harmonic Mean of Sample Size			1131.93279
Standard Deviation of Dif Mean			0.08126889
t-statistic of Dif Mean			0.98438653

	<u>Mothers</u>		
	<u>Mean</u>	<u>N</u>	<u>MSE</u>
No	2.68	2842	47.275
Yes	2.95	848	
Dif			
Mean	-0.27		
Harmonic Mean of Sample Size			1306.241734
Standard Deviation of Dif Mean			0.269041322
t-statistic of Dif Mean			-1.00356331

	<u>S. Fathers</u>		
	<u>Mean</u>	<u>N</u>	<u>MSE</u>
No	2.74	3588	0.242
Yes	2.69	101	
Dif			
Mean	0.05		
Harmonic Mean of Sample Size			
196.4695039			
Standard Deviation of Dif Mean			
0.049633523			
t-statistic of Dif Mean			
1.00738365			

The result indicates that fathers, single mothers and single fathers perhaps use internet efficiently and effectively as a tool to search for employment. Even though the interpretation of this result may not be conclusive, on the surface it suggests that these three groups might have normal access to internet and might be savvy enough to use internet for job searching. In case of single females (mothers) and single males (fathers) it is conceivable that since they do not have financial backup or other support, they are naturally self-reliant and are forced to learn internet to be more efficient to survive.

In the case of married males (fathers), being possibly the single source of income and having to care for family, he also has to be vigilant in looking for jobs and learning the process.

The difference in means in the case of married females (mothers), however, is significant. It indicates lower use of internet in job searching.

	<u>S. Mothers</u>		
	<u>Mean</u>	<u>N</u>	<u>MSE</u>
No	2.73	3488	1.286
Yes	2.82	202	
Dif			
Mean	-0.09		
Harmonic Mean of Sample Size			
381.8840108			
Standard Deviation of Dif Mean			
0.082067224			
t-statistic of Dif Mean			
-1.096661924			

This result certainly requires more in-depth analysis, since the interpretation may also not be conclusive. One element to consider is the possibility of lack time and/or desire to access the internet or lack of opportunity to learn internet usage. Certainly, being a housewife naturally brings family, children, cooking, and cleaning along. Or perhaps the time on the internet is spent for shopping and casual readings rather than looking for jobs.

After all being a mother, the primary responsibility is the children and household. Therefore, time might be an issue. Another factor worth mentioning here is the fact that mothers, if stay home, focus on the house and family than work. They are not the primary source of income therefore; employment may not be a priority to them.

This analysis raises another important issue of social capital and its impact on women empowerment. Social capital “refers to connections among individuals, social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 1995b). It is a matrix of knowledge, human networks, and contacts that one may create during his/her life time and use as a strong tool to address and satisfy a wide range of desires and needs (Fitz-Enz, 2009). This collective asset is often stronger among men because of their intense interactions with outside world, especially in their working environment.

Policy makers recognize the important role of social capital and its role in fostering opportunities for employments, among other advantages. They, therefore, apply relevant policies to prevent unequal distribution of social resources and facilitate participation of disadvantaged members of a society in social networks. Without appropriate policies, this issue will result in lower rate of women’s participation in the work force which can, and perhaps will, lead to disproportionate compensation to women in even lower-paid forms of work, such as part-time jobs, self-employment, and home-based work.

V. Other Related Works:

Role of internet in fostering social capital

Disagreement among the social science researchers regarding the potential role of Information and Communications Technology (ICT) in building social capital and its impact on society at both micro and macro level has been as vast as its users and philosophers. The ever increasing popularity of this phenomenon has been challenged by controversy concerning its actual meaning and effects (Portes, 2000).

The proponents of this phenomenon argue that ICT enhances social capital and institutionalizes many aspects of human involvement in society; such as knowledge building, social interaction, community involvement, and political activities. On the opposite side of this spectrum researchers debate that ICT-based interaction lacks, and even eliminates, the human touch of communication, therefore fails to build mutual trust, confidence, and faith which are the underlying components of a society. However, despite the diversity of opinions and conceptions regarding the nature, value and definition of social capital and the impact of ICT in its contraction or expansion, researchers are convinced that ICT plays an important, and positive, role in involvement of users in societal activities.

The impact of Information and Communication Technology (ICT):

Determining the impact of ICT on social capital is a laudable goal, even though often difficult in practice. However, because of the time and the size limitation of this paper, I narrow the objective of this report to the use of internet by job-seekers to find

employment.

The existing human appetite for information and communications can no longer be satisfied by the old communications methods. ICT not only has changed the interaction between human beings, but it has profoundly influenced the way we think, behave, and assess our environments, far beyond the economic gains. The explosion of population in the past two centuries — from 1.2 billion population in 1885 to 6.7 billion currently — competitive labor market, and depressed global economy is now challenging the nations and states to continuously enhance their ICT infrastructures and continue technological learning to achieve a sustainable economic growth. (Juma & Yee-Cheong, 2005).

It is very difficult, if not impossible, to quantify the impact of ICT on all aspects of society. However, according to the UN Millennium Project Report, (edited and coordinated by Juma and Yee-Cheong, 2005), ICT can quantifiably be applied to three major areas. First, ICT can be defined as the governance engine of various levels of public and private sectors in transferring information and being a gateway between learning institutions and industrial sections. Second, ICT has the important burden of providing information as a vital tool to the public and facilitate their communications to enhance their ability and knowledge to make better decisions and improve their living standard. Third, ICT can reduce transaction cost, improve efficiency, and increase productivity of literary all sectors of industry which translate into economic growth and prosperity in the society.

At the global level, developing countries can directly participate, and benefit, from innovations, new technologies and reorganization taking place in developed countries. ICT enables different nations from global North and global South to exchange knowledge and information, negotiate terms of contracts, transfer know-how, reduce income inequality and improve lives. These are the foundations of democracy which has been accepted and shared for many centuries. ICT being “a fundamentally generic technology will likely have the greatest impact on achievement of the goals, because it anticipates and foreshadows many of the critical socioeconomic growth and development models and modularity’s of the future. (P. 49)

ICT has been described as the fundamental force behind shaping the new pattern of global economic transformation, globalization, and “distributor of comparative advantage” (Dicken, 2003). ICT not only facilitated but it accelerates interconnection between people, transfers ideas, knowledge, and innovation which in turn results in power shift within the social institutions and social transformation. ICT deeply influences different levels of societies from local — market information, government support, trade opportunities, social services— to national — e-commerce, e-government — to regional — sharing education, interaction between citizens and government and vice versa — to global level.¹²

¹² <http://answers.google.com/answers/threadview/id/337199.html>

The Concept and Definition of Social Capital

Social capital is one of the most researched, yet controversial concept in social science. It is one of the most debated concept which is borrowed from sociology and ventured into other sciences (Portes, 2000). It is used to explain diverse social phenomenon from “differential performance of children raised in intact vs. broken families”¹³, to “the success of housing programs in some communities but not others”¹⁴, to “the economic development and government efficiency of cities and even entire nations”.¹⁵ Despite the variations of definition of social capital, there is very little disagreement about the significant role that social capital plays in the structural design and establishment of societies. It is the building blocks of social construct that organize and institutionalize the collective actions of the members of societies and direct their energy toward a common goal to serve the interest of the community. It is perceived to be the “features of a social organization such as networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995a).

One of the important elements of democratization of emerging countries is availability of human capital for reduction of poverty. In a recent report from the world bank¹⁶, social capital has assessed to be as valuable and necessary as human capital.

Researchers have established a positive correlation between social association and economic growth (Fedderke, de Kadt, & Luiz, 1999). They suggest that “social association includes informal rules, norms, and values that facilitate coordinated action for the members of the society, and enables cooperative ventures that would otherwise be infeasible” It is strongly argued that social capital is the main ingredient of society and the vehicle through which economical growth is possible. “It therefore becomes a matter of considerable importance to economic development both that the form such rules take be appropriate, and that such social capital be recognized as an asset or factor of production in the developmental process in its own right” (P. 709).

In a broad sense, social capital is explained by Seral- geldin and Grootaert¹⁷ as a “glue that holds society together,” or a highly integrated and complicated web of norms, customs, and organizational structure that resources are accessed and distributed. The other three prevalent definitions of social capital consists of “(a) norms of horizontal association” attributed to Putnam; “(b) ... social structures that facilitate collective action” discussed by Colman; and “(c) ... the social and political environment that enables norms to develop and shape social structure”¹⁸. Arguably, an individual living in a low social capital environment is equipped with less tools therefore requires more time and effort to accomplish certain objectives, compared with one with higher wealth of social capital. This theory can easily be tested in groups’ activities, community works,

¹³ (Portes, 2000), original work from (Hao, 1994).

¹⁴ (Portes, 2000), original work form (Lang and Hornburg, 1998; Briggs, 1998).

¹⁵ (Portes, 2000), original work from (Putnam, 1993; Schiff, 1992).

¹⁶ <http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/0,,menuPK:336998~pagePK:149018~piPK:149093~theSitePK:336992,00.html>.

¹⁷ (Fedderke, et al., 1999), P. 710

¹⁸ Ibid.

and political initiatives, to name a few examples. Individuals working in high social capital enjoy a higher degree of confidence, accomplishments, motivations and trustworthiness and are apt to more interaction and socialization. These personal traits and characteristics are more effective in institutionalizing societal rules and democratizing environments.(Frances & Pöysti, 2003).

ICT and Rise of the Internet:

In recent years internet has been the main tool in collecting information in almost every aspect of our lives. Statistics show that the use of internet is increasing exponentially in the U.S and around the world, especially among the adult working group. Internet is becoming an important source of searching for jobs, more than any off line methods among male and female workers (Fountain, 2005). Extensive websites supported by sophisticated databases and search engines create a worldwide network to locate and match employees and employers demand. Joined by high circulation media, internet now is largest and most sophisticated source of gathering and disseminating information. Applications with accurate features have been deployed to assess, match, and choose or reject applicants automatically. This screening process works at a high level of accuracy and speed.

In addition to websites, organization through newspapers post their job related information on line and demand that the future employee submit their resume via e-mail. By eliminating the postal cost and expediting the transmission, both the company and employee benefit from a stream line process of searching and locating a match. A more important aspect of online search is the capability of finding information about the company, its location, nature of its business, its reputation, and even financial status before even applying for a job (Fountain, 2005).

Impact of the Internet on Labor Market:

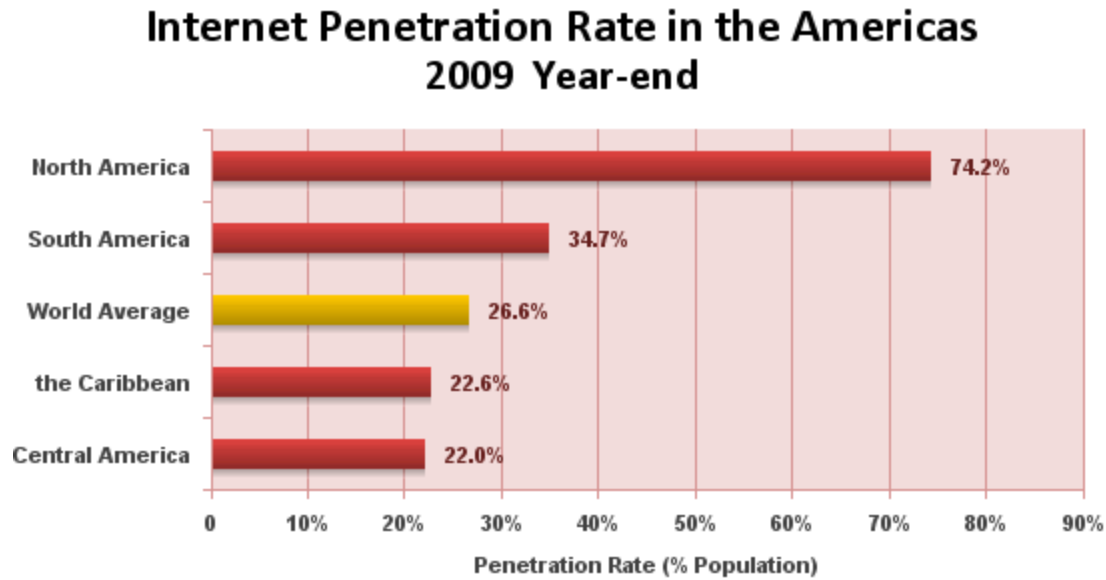
The impact of the internet on the labor market is not quite clear. This question can be analyzed, in a broad sense, from social, political and economic standpoint. The most visible impact is in the areas of employee-employer matching, telecommuting, and expansion of labor market for both employee and employer (Autor, 2001).

There is no doubt that the Internet has positively impacted the “ease and availability of employment information”, but whether such positive impact has had similar effect on ‘employment outcome’ is the subject of many different researches (Stevenson, 2006). Stevenson observes that “Over 80 percent of online job seekers are employed at the time of their job seeking and Internet users, conditional on observables, are more likely to change jobs and are less likely to transition to unemployment”(P.1). Therefore, it is reasonable to conclude that internet is an important means of “flow” between jobs for the mostly employed individuals and has little impact on the unemployment and duration of unemployment.

To see this observation historically, and graphically, I have compared the internet penetration rate in the United States (Figure 1&2), the unemployment rate and the core inflation (figure 3), the natural and actual rate of unemployment (Figure 4), and

unemployment rate by group age (figure 5)¹⁹. The graphical observation indicates that there is a correlation between internet penetration and employment, controlling for other variables. However, the causal relationship at this point is unclear for me. In other words, as the rate of internet penetration increases, the rate of unemployment decreases. This fact is particularly noticeable from mid 1980s when the internet started to rapidly dominate the commercial markets.

Figure 1:



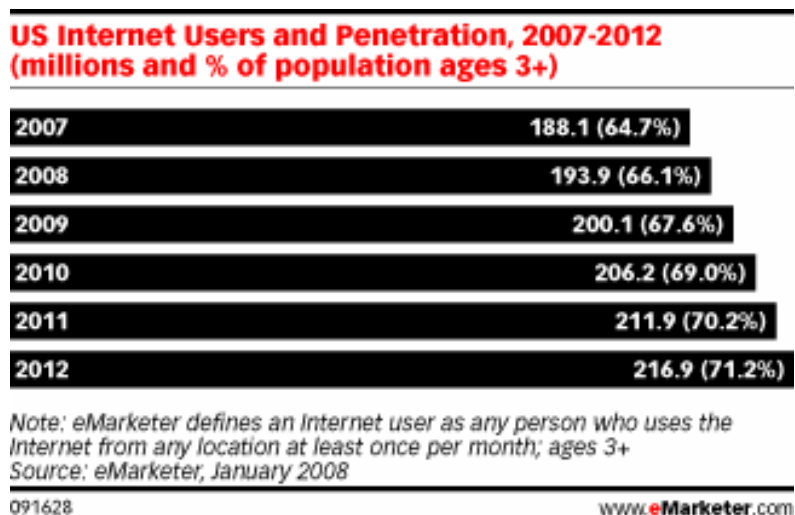
Source: Internet World Stats - www.internetworldstats.com

There are 446,483,050 estimated Internet users on Dec. 2009 in the Americas

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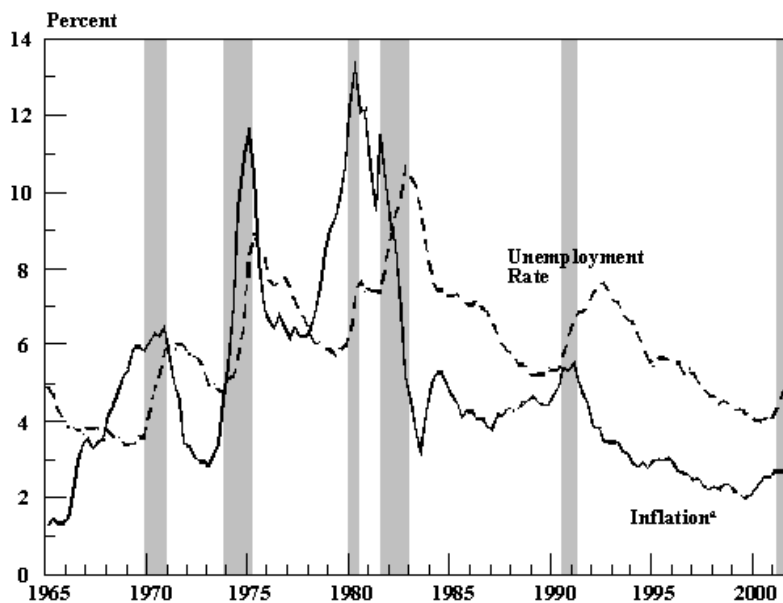
¹⁹ I have not examined the raw data to verify the accuracy of these graphs. I assume that the data from which these graphs are produced are accurate.

Figure 2:



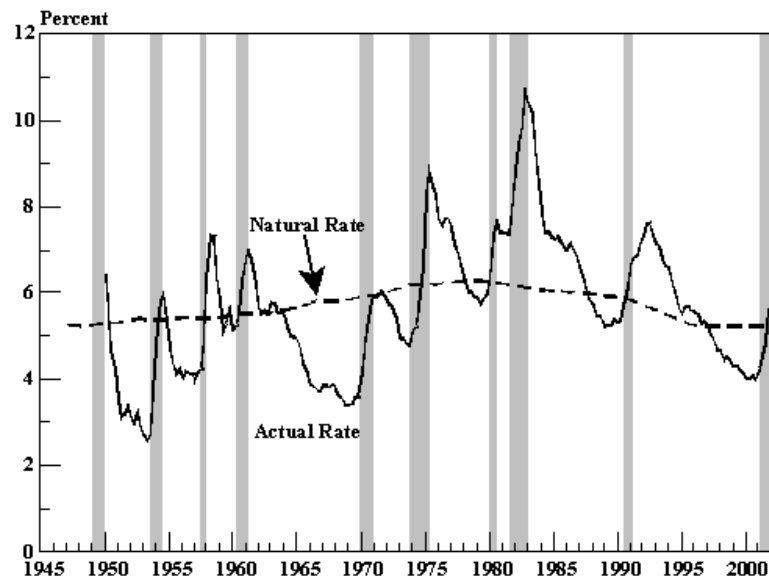
Source: Comparing Internet Penetration Rate.
Impact Lab, A Laboratory of future human experience.
<http://www.impactlab.com/2008/03/05/comparing-internet-penetration-rates/>

FIGURE 3.
THE UNEMPLOYMENT RATE AND CORE INFLATION



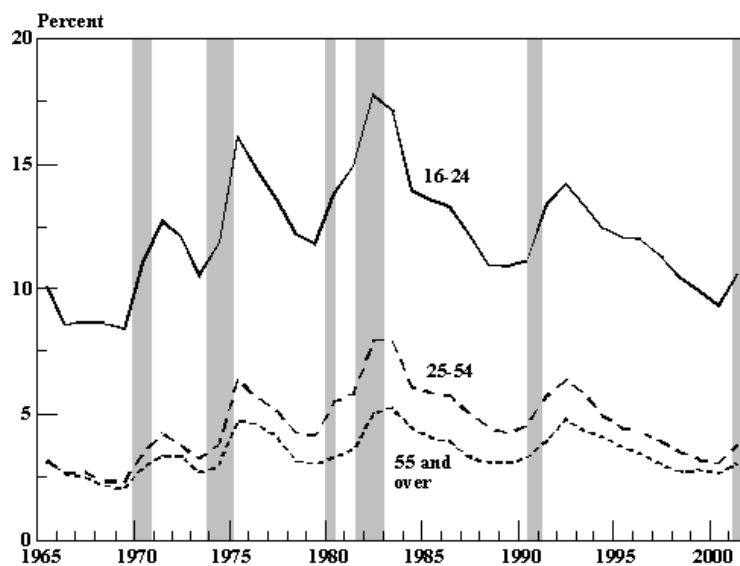
Source: The Congressional Budget Office (2002),
THE EFFECT OF CHANGES IN LABOR MARKETS ON THE NATURAL RATE OF UNEMPLOYMENT
<http://www.cbo.gov/doc.cfm?index=3367&type=0>

FIGURE 4.
THE NATURAL AND ACTUAL RATES OF UNEMPLOYMENT



Source: The Congressional Budget Office (2002),
THE EFFECT OF CHANGES IN LABOR MARKETS ON THE NATURAL RATE OF UNEMPLOYMENT
<http://www.cbo.gov/doc.cfm?index=3367&type=0>

FIGURE 5.
THE UNEMPLOYMENT RATE BY AGE GROUP



Source: The Congressional Budget Office (2002),
THE EFFECT OF CHANGES IN LABOR MARKETS ON THE NATURAL RATE OF UNEMPLOYMENT
<http://www.cbo.gov/doc.cfm?index=3367&type=0>

The Internet and Its Impact on employability:

It is imperative to provide accurate and timely information about the labor market to those sectors of society who are seeking employment. ICT, particularly internet, is the mechanism that policy makers are constantly turn to when demanding high quality information both for policy making purposes and/or their constituents. (Lindsay, 2005).

It is logical to accept a simple economic model that suggests availability and ease of access to accurate, yet inexpensive, information about vacant jobs enable job seekers to find faster and better jobs, and allows employers find a better a more suitable person for their needs. As a result of decrease in the cost of searching and obtaining information, both individuals and society as a whole benefits from this phenomenon (Fountain, 2005). An information rich market, benefits both workers and employers. It represents a better opportunity for the workers to find jobs and higher possibility for the employers to find the exact match for their tasks. This condition reduces time and efforts for both employees and employers. According to a study by Granovetter's of 1974²⁰ job seekers look for a balance between the quality and quantity of information.

Internet is perceived as the future fabric of human interaction which will create the culture of its own in building social capital, facilitate cooperation and coordination, and glues the communities together (Putnam, 1995b) . Even though there is a wide range of disagreements as how internet restructures human interaction in economics and personal relation, there is very little doubt that the change is inevitable.

According to a recent research, internet will be a major tool for developing human capital in both developing and developed countries and will enhance the social capital in both environments. Same report also praises the role of internet in democratization of society, advancement of human rights, improvement of economic condition, welfare of its members, and expansion of labor market (Bank, 2004).

Steadily and constant growth of internet has created a large and easily accessible market for both employees and employers. It allows job seekers to search and find employment opportunities of their choice in their selected environments (Gleez, 2007) . With literary minutes and without any major efforts a major list of job opportunities with detail information about the task, compensation, and the even the nature and philosophy of the management is provided to job seekers at no charge. Using virtual reality, the candidate physically walks through the corridors and offices of his future employer, meets all other employees and can visit his future office. He then negotiates his salary and perks, looks at the tasks and plan his first day at his new job.

It is very difficult, for job seekers to conceptualize the time that the only way of finding employment was to either go physically to the location and/or read the weekend newspapers. Under those circumstances, candidate was limited to the area he/she was working, the time he could have met someone in the organization, with very limited information about the job or the prospective employers.

²⁰ (Fountain, 2005), original work by Granovetter.

Another important characteristic about finding employment on the Internet is that candidates can create an account to become a member of the employment agencies and/or the institution itself. This approach will allow the job seekers to be on the mailing list and anytime an opportunity arises, they automatically get informed. Membership is usually free and the candidate's profile will be made available to future potential employers.

Special databases have now been created which maintains an updated version of the candidate's personal information, contact details, education history and history of employment. In certain occasions the candidate is even allowed place his picture on the website for possible verification.

Comparing the current technology with the way we looked for jobs in the past is not very difficult. You no longer need to retype a cover letter and/or copy your resume for every perspective employers. Searching for job is now done with internet which not only finds the opportunities but notifies you of the ones you have not seen and did not know about.

As a policy issue, it is important to know that finding employment on the Internet is not only free, but it is very convenient. Additionally, you are not limited by location and time, and you can access to any opportunity you may wish to check, regardless whether the employer's office is open or closed for business. These conveniences and opportunities are not limited to nation job markets. The same method of search and data gathering can also be applied to international jobs.

According to U.S. Department of State (www.state.gov) the Major reasons for using the Internet in the job search:

- Accessible 24 hours a day, seven days a week.
- Free access to information and resources.
- Research deeper into local area as well as search far beyond regular boundaries.
- Using the Internet demonstrates leading-edge skills.
- Through the Internet your network will be much broader geographically and professionally.
- Widens the career alternatives and options available to explore.
- Free resume posting.

Internet is a network of all networks which "became woven into every part of our social life" (Lessig, 1999). Within few years the developments in all aspects of our society have been drastically impacted by a revolutionary technology that has removed all borders and barriers in communications at the global level. This highly interactive web system was originated in Department of Defense in early 1950s. Different users from all walks of life with a personal computer and telephone line can join this information supper highway at the speed of light with no limitation and restrictions. Access to this global communications network provides the users both "inter personal and inter organizational communications through e-mail and also access to a cornucopia of information through the World Wide web" (Dicken, 2003). Despite extensive research on the impact of internet in social capital or economic growth, there is not any hard evidence which can

provide an accurate picture of this phenomenon. The domino effect of this technology on other sections of the society is still unknown. It is no longer considered to be simple convergence of voice, video and data. “reversing the relations between quality, functionality, and price, it has already turned telecommunications orthodoxy on its head” (Juma & Yee-Cheong, 2005).

Internet enhances social capital by encouraging and promoting civic engagement of community members, which is likely only through gaining knowledge, building relationship and coordinating community activities in an efficient, effective and inexpensive way. ICT has drastically lowered costs of communications, enhanced social networks and facilitated entering into new networks (Larson, 1997). Online newspapers, educational resources, diverse methods of presentation, visual and graphical methods have created an easy-to-learn environment for any individual and different background.

Economics of Information and labor market

There is no doubt that information is the life blood of any sector of economy, and certainly labor market is no exception to this rule. Identifying the most qualified employee, rejection of the least qualified applicant, ease of search and identifying the best possible opportunity are just a few examples of the crucial role of information in labor market. The search for Quality and Cost of Information is diligently avoided in this paper because of degree of complexity of the subject. However, the collapse of overpriced dotcom companies and the related stock prices raise the question of the ‘ratio of hype to reality’ in the labor market. George Stigler (1962) explained this concept quite elegantly:

“From the social standpoint, the return from the investment in information consists in a more efficient allocation of the labor force: the better informed the labor market, the closer each worker’s (marginal) product is to its maximum at any given time. From this viewpoint, the function of information is to prevent less efficient employers from obtaining labor, and inefficient workers from obtaining the better jobs. In a regime of ignorance, Enrico Fermi would have been a gardener, Von Neumann a checkout clerk at a drugstore”.

The increasing impact of information and communications technology (ICT) on earnings, number of hours worked, and recruitment is very evident. This influence appears to be high in Global north and lower in Global south. There seems to be a positive correlation between ICT penetration and economic and technology growth (Freeman, 2002). This ‘New Economy’²¹ is “broadly defined by the extension of information and communication technologies (ICT or IT), particularly the internet, to economics activities, is changing the labour market” (P.288). Researchers such as Freeman has

²¹ Freeman (2006) has used the US Department of Commerce definition for ‘New Economy’, as “an economy in which It and related investments drive higher rate of productivity growth’ and where IT-related changes in the organization of production and composition of employment also support atypically a high rates of productivity growth in periods of economic slowdown”

attributed some of the major economic developments in the United States — such as high labor productivity, lower inflation, lower unemployment, and higher market flexibility—in the past decade to development and penetration of ICT (P.289).

In the case of labor market, three potential gains can be directly recognized from information in relation to the economy: reduced transactions costs; speedier clearing of the job market; and better matching between workers and vacancies” (P.300). A cost comparison between a job boards with 1.8 million visitors that charges \$98 for posting a recruitment advertisement with a major newspaper with Sunday circulation of 1 million readers which charges \$3,840 is a testimony to this fact²². In terms of success rate for finding jobs through internet, Peter Kuhn (Kuhn & Skuterud, 2000), argued that there was not any major difference between those who used internet for job search and those who used other means. The highest contribution of information in the labor market is attributed to better matching between workers and recruiters. Internet, through providing large volume of information in a short period time and lower cost, allow better and more efficient job matching between workers and vacancies. Internet removes geographic barriers and deconstructs the good-old-boys network (P.300).

Globalization and labor market:

According to Fisher (2006), the intense competition in global labor market, a significant element of globalization, has impacted the U.S. labor market more than any other country. The complexity of this subject prohibits detail discussion at this point, but the oversimplified version of this issue is the fact that when U.S., as a developed country, faces labor competition against other developing nations, the wage scale in U.S. decreases and the compensation rate in the developing country increases. Even though lowering the labor cost hurts workers and benefits consumers, since these two groups are basically the same people, arguably the effects cancel. However, “if low-wage workers are providing most of the savings, they will not come close to recouping their losses by paying less for cheaper consumer goods”.²³ This cost imbalance is a major incentive for manufacturers to either shift their production facilities to a developing nation or, under more favorable circumstances, completely outsource its products to a foreign entity.

Globalization is no longer a myth or option, but an accepted reality. “Globalizing economies are increasingly open to movements of goods, services, capital, people and ideas across borders. Citizens and companies do not seek to do business in far-away places for the sheer adventure of it. They do it because it makes them better off. This is the natural process of capitalism, constrained by the cost of transport and information and accelerated by technologies that make it cheaper to move goods, services and ideas. Globalization will proceed apace unless or until the governmental authorities intervene to stop it”(Fisher, 2006).

²² Freeman used this estimate which was prepared by Alen Krueger (2000, personal communications). The estimate compared eight largest job boards in the U.S with approximately 1.8 million visitors which charged \$98 for placing a vacancy; with eight major U.S. based newspapers with Sunday circulation of approximately 1 million readers which charged \$3,840 for placing the ad for 30 days.

²³ The impact of global competition on wages.
<http://zfacts.com/p/385.html>

The current depressed labor market combined with major outsourcing strategies by large organizations and increase in the median life expectancy of citizens, which usually results in longer employment desire, creates a job shortage in any economy. The ever increasing burden of unemployment on the state and federal level mandate that government and policy makers to search for methods to help the unemployed and laid off individuals to find jobs faster, easier, and more economically, and leave the unemployment insurance compensation sooner. Therefore, It is important to find out which category of the society will use Information and Communications Technologies as a vehicle to search for jobs. The answer, depending on the outcome, assist lawmakers and strategists to determine to what extent, if any, they should promote and provide ICT mechanism to be used by the citizens.

Labor Market Segmentation²⁴

Reich et.al (Reich, Gordon, & Edwards, 1973) rejects the historical perspective of market segmentation which had been viewed as ‘exogenous to the economic system’ based on race, sex, educational credential and industry grouping. They argue that the present labor market condition is based on four segmentation process: segmentation into primary and secondary market; Segmentation within the primary sector; segmentation based on race; and segmentation based on sex.

Stability is the factor that differentiates between primary and secondary market. In a primary market sector, wages, leadership, working habits and skills are stable resulting in low turnover and higher wages. In the secondary market, however, lower wages, less leadership and high turnover is the dominating factor. This segment is mainly occupied by minority workers, women, and inexperience employees (P. 359).

The primary market segment is also divided between “subordinate” and “independent” jobs. The subordinate groups are considered as individuals highly disciplined in following orders and working solely based on defined and prepared objectives. The independents are perceived to be creative and require minimum degree of supervision. Race is an element of segmentation that exists in secondary and subordinate segments of labor market. Sex adds additional factor of segmentation to the theory. Historically, and to some extent today, certain jobs have been designated for men and some women. Wages in the male-dominated jobs are higher than comparable female jobs (P. 360).

Digital divide.

The author argues that the historical analysis about labor market segmentation is no longer limited to sex, race, education, industry grouping, and primary or secondary sectors; but is now more challenged by the concept of digital divide, digital inequality and technology orientation. Despite high rate of Information and Communication Technology (ICT) diffusion —75% in North America— spread of this medium in our society has been unequal. Such digital inequality can and will lead to social stratification (Hargittai, 2003).

²⁴ Contents of this section are based on a journal article titled “A theory of Labor Market Segmentation”. See Bibliography. I am arguing that the historical analysis about labor market segmentation is now challenged by the concept of digital divide, digital inequality and technology orientation rather than sex, race, education, and industry grouping.

Proponents of internet argue that diffusion of internet results in development of knowledge-intensive activities which in turn reduces inequality, improve human capital, enhance social capital, and collectively improve societal life. At the same time, unequal access to such medium can, and will, rapidly deny opportunity to underprivileged (P. 3).

Concept of digital divide has historically been argued in terms of access, and access is perceived as having a computer unit connected to internet either at home or office. The concept of digital divide is, now, expanded to include other factors such as quality of connection and equipment, autonomy of use, availability of social support to train and enhance the individual on the use of internet (P. 3).

Hargittai define digital divided as “inequalities in access to and use of the medium, with lower levels of connectivity among women, racial and ethical minorities, people with lower income, rural residents and less educated people”. In this discussion the historical concept of “access” as the only factor of digital divide is complemented by the notion of “use”. Effective access is no longer defined as having a computer system connected to internet, but the ability of using the medium efficiently. This issue is discussed by David Bolt (Bolt & Crawford, 2000) in his assessment of rapid increase of diffusing internet in public schools without proper and comparable training.

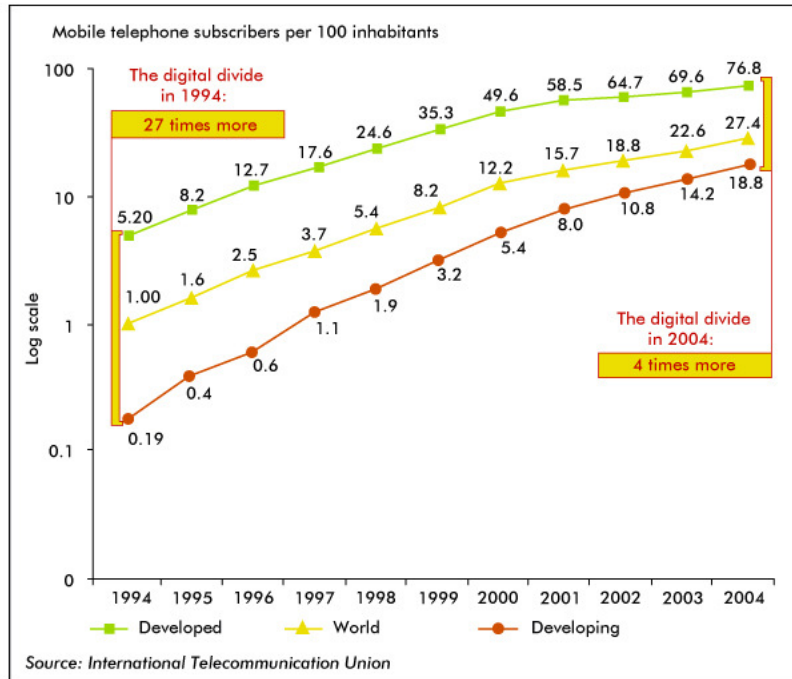
In a policy debate, accessibility and availability is not the only requirements to close the gap in digital divide. Internet access requires training which calls for flexibility in our educational policy.

Technological innovation coupled by major diffusion of Information and Communication Technology (ICT) has been rapidly transforming our environment to ‘knowledge society’. The life blood of such society is information. To succeed under such environment, the actors must be able to have equal access to information. Therefore, storage, retrieval, transmission and distribution of information play a vital role in such environment.

Over the past ten years, the digital gap between the Global north and the Global south nations has been shrinking. Nonetheless, the digital divide between these nations is still at an unacceptable level. The following charts, and the accompanying data, depict disturbing facts regarding the state of Information and Communication Technology (ICT) and use of internet around the world²⁵.

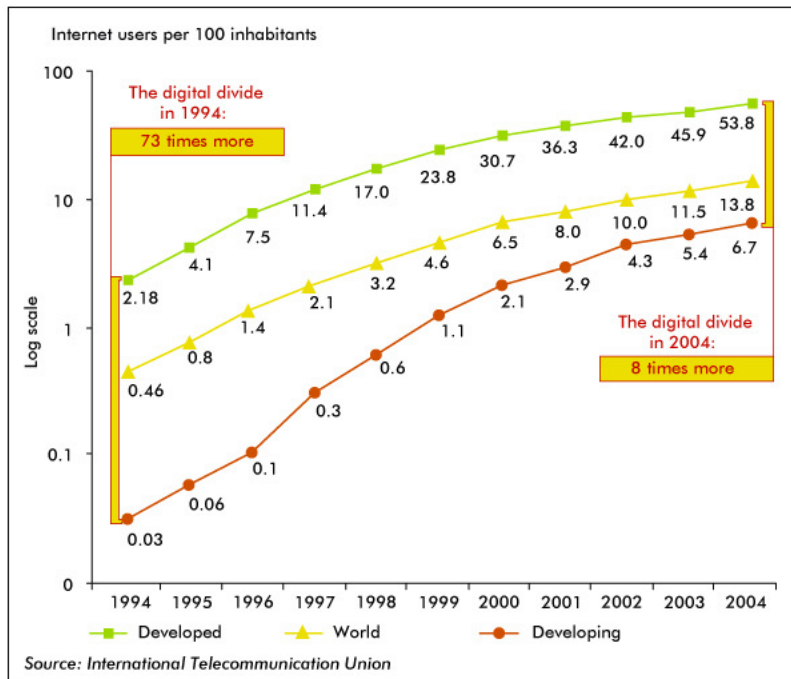
²⁵ These tables, figures, charts, numbers and statements are entirely retrieved from:
World Summit on the Information Society Geneva 2003 - Tunis 2005
The State of ICT access around the world.
<http://www.itu.int/ws/tunis/newsroom/stats/>
I have not researched or verified the accuracy of the numbers.

Table 1:



In 2004, the developing world had 4 times fewer mobile subscribers per 100 people than the developed world.

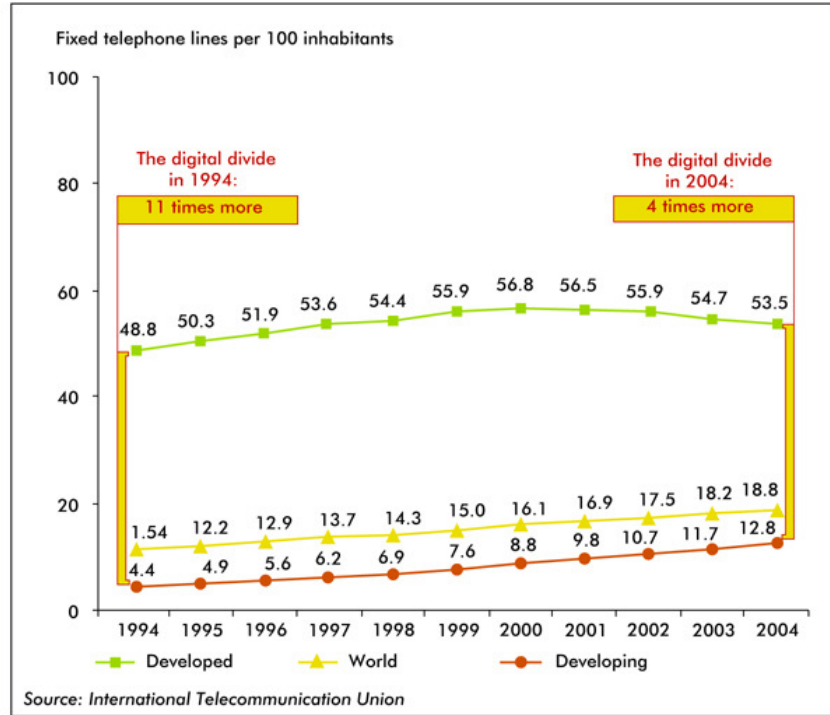
Table 2:



Internet:

In 2004, the developed world still had 8 times the Internet user penetration rate of the developing world.

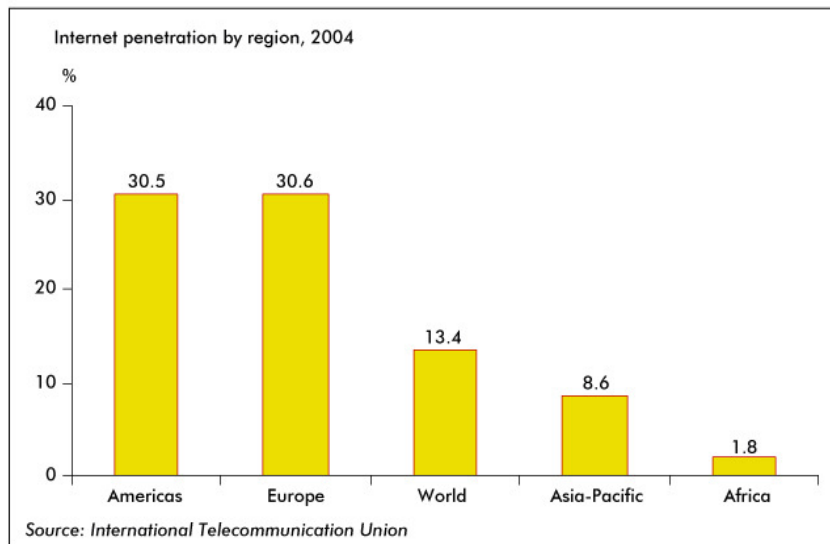
Table 3:



Fixed

In 2004, the developing world had 4 times fewer fixed telephones than the developed world.

Table 4:



Internet Penetration by Region in 2004.

*The Internet's Haves and Have-nots in the United States*²⁶:

“Researchers call it the “digital divide.” At a time when nearly everyone seems to be on the internet all the time, a few demographic groups appear to be permanently stuck in the digital dark ages”.

“Minorities, the elderly, low-income families and residents of rural areas have historically lagged behind in internet use. Technology advocates were hoping as computers became cheaper and more ubiquitous, the divide would narrow. But the latest numbers from the Pew Research Center’s Internet & American Life Project show only minor gains. That worries researchers who see a large segment of the population shut out of the growing amount of information and opportunities that can only be found online. “The gap hasn’t tremendously shrunk,” said Lee Rainie, the project’s director. “The disparity still exists — even as more people are online.”

Internet Users (In Percent) in the United States in 2009:

Total Adults	74
Race/Ethnicity:	
White	76
Black	70
Hispanic	64
Age:	
18-29	93
30-49	81
50-64	70
65+	38
Household Income:	
Less than \$30,000	60
30,000 – 49,999	76
50,000 – 74,999	83
75,000+	94
Community type:	
Urban	74
Suburban	77
Rural	70

²⁶ This entire section is retrieved from:
Pew Internet; Pew Research Center’s Internet & American Life Project.
Internet, broadband, and cell phone statistics
by Lee Rainie, Jan 5, 2010
<http://www.pewinternet.org/Reports/2010/Internet-broadband-and-cell-phone-statistics.aspx>
I have not examined or verified the data for accuracy.

The striking picture of the ICT landscape around the world²⁷:

Internet

- In 2004, less than 3 out of every 100 Africans use the Internet, compared with an average of 1 out of every 2 inhabitants of the G8 countries (Canada, France, Germany, Italy, Japan, Russia, the UK and the US).
- There are roughly around the same total number of Internet users in the G8 countries as in the whole rest of the world combined:
 - 429 million Internet users in G8
 - 444 million Internet users in non-G8
- The G8 countries are home to just 15% of the world's population - but almost 50% of the world's total Internet users.
- It is estimated that top 20 countries in terms of Internet bandwidth are home to roughly 80% of all Internet users worldwide.
- There are more than 8 times as many Internet users in the US than on the entire African continent.
- There are more than three times as many Internet users in Japan as on the entire African continent.
- There are more than twice as many Internet users in Germany than on the entire African continent.
- The entire African continent - home to over 50 countries - has fewer Internet users than France alone.
- There are more Internet users in Seoul (Republic of Korea), than all of sub-Saharan Africa, excluding South Africa.
- There are more Internet users in London than in the whole of Pakistan.
- Switzerland, host of the first World Summit on the Information Society, has five times the Internet penetration rate of Tunisia, host of the second Summit.
- Discrepancies in international Internet bandwidth - the critical infrastructure that dictates the speed at which websites in other countries can be accessed - are nothing short of astounding. Tiny Denmark has more than twice the international Internet bandwidth that the whole of Latin American and the Caribbean combined.
- The high cost of international bandwidth is often a major constraint, with developing countries often having to pay the full cost of a link to a hub in a developed country. More than 40 countries have less than 10Mbps of international Internet bandwidth, whereas in Belgium, a 9Mbps ADSL high-speed Internet package is available for just EUR 60 a month.
- There are still 30 countries with an Internet penetration of less than 1%.

²⁷ The data and statements in this section are entirely retrieved from:
World Summit on the Information Society Geneva 2003 - Tunis 2005
The State of ICT access around the world.
<http://www.itu.int/wsis/tunis/newsroom/stats/>
I have not researched or verified the accuracy of the numbers.

Gender in the Information Superhighway:

Invention, and later on introduction, of internet into the society created a virtual 'global village' which fundamentally changed the way we communicate and interact with each other. While the vibrating excitement of its potential in removing communication barriers between the societies radiate through the core of society; the sociologists, politicians and economists concern about its ability to exacerbate the existing segmentation, create new problems and magnify the old ones. One factor of major concern is the issue of gender.

"Gender inequality holds back the growth of individuals, the development of countries and the evolution of societies, to the disadvantage of both women and men"²⁸. The restrictions, voluntarily or involuntarily, placed on the choices and opportunities available to women have direct negative impact not only of women, but also on the society as a whole. It is just recently that the society has woken up to the bitter reality of such destructive attitudes. "The reality of women's lives has been invisible to men. This invisibility persists at all levels, from the family to the nation. Though they share the same space, women and men live in different worlds"²⁹.

But what is 'gender' and how it is different from 'sex'?

"In addition to age, gender is one of the universal dimensions on which status differences are based. Unlike sex, which is a biological concept, gender is a social construct specifying the socially and culturally prescribed roles that men and women are to follow. According to Gerda Lerner in The Creation of Patriarchy, gender is the "costume, a mask, a straitjacket in which men and women dance their unequal dance"³⁰

There is a preconceived notion that female participation on the internet is a matter of their preference and attitude toward technology not their aptitude. Therefore, female have less overall experience with computers than male. Such negative view, as limited research supports, manifests itself in participation on the internet. Schumacher (Schumacher & Morahan-Martin, 2001) concludes that there is a positive correlation between "competence and comfort level with the internet and computers" and participation on the internet among male and female students.

Sherman (Sherman, et al., 1999) argues that even though female participation in general use of World Wide Web is increasing, but the gender gap is still significant and in some cases it is even reversing direction due to the fact that "their attitude toward technology do not seem to be converging".

²⁸ The state of world population 2000, United Nations Population Fund.
<http://www.unfpa.org/swp/2000/english/ch01.html>

²⁹ Ibid.

³⁰ Author Unknown.

Source: GENDER AND SOCIETY: A matter of nature or Nurture?
<http://www.trinity.edu/~MKEARL/gender.html>

The internet gender gap goes beyond the concept of just access or availability. It includes other significant factors such as “technology fluency, motivation, and opportunities to learn [which] may lead to a two-tiered world of knowers and know-nots, doers and do-nots”(Tapscott, 1998). Such gap will create a society where ““The rich are going to be getting richer in terms of information," Katz said.”The information-poor will become more impoverished because government bodies, community organizations, and corporations are displacing resources from their ordinary channels of communication onto the Internet.”³¹

In the new economy where Information and Communication Technology dominate every fiber of our society, access to internet and the ability to use this medium is increasingly vital and those who lack such skills will suffer from social, economic and educational disadvantage. One factor which may be able to close this gap is the substantial improvement in the usability and ease of computer systems. Recent researchers in the area of human-computer interactions have resulted in development of many advanced, yet user-friendly applications. This phenomenon coupled with major decrease in the price and availability of hardware and software should bridge the gap in gender inequality on the internet.

Impact of technology diffusion in labor market, job search and workers mobility:

The significant role of skilled and educated workers in enhancing economic growth and sustaining competitiveness in a global knowledge-based market is indisputable. Such human capacity —skills, knowledge, and competencies— create human capital which is the engine for transforming a society “into an Information and Communication Technology (ICT) driven and knowledge based society” (Oyekanmi, 2007).

Research indicates that there is a positive correlation between the ‘variations in online behavior’ and the users level of experience in internet (Howard, 2001). This result emphasizes the important role of diffusing technology in labor market. Advent and availability of internet has created a mechanism for both employers and employees to interact in a more efficient, cost effective and convenient manner. In addition to the expanded ability of both employees and employers for finding the right match, technology impacts both occupational and geographical mobility of the labor market. “Geographic mobility refers to a worker's ability to work in a particular physical location, while occupational mobility refers to a worker's ability to change job types”³². Diffusion of technology facilitates both occupational and geographical mobility. Employees can easily advertise their requirements on the web and employers can conveniently search and find their desired jobs. Telecommuting has now created a virtual working

³¹ Katz, cited by Staff Writer, CNET News, March 14, 1997, “Society’s digital divide”
<http://news.cnet.com/2100-1023-278007.html>

³² The Economics Of Labor Mobility
<http://www.investopedia.com/articles/economics/09/labor-mobility.asp#13043831409832&close>

environment which practically knows no boundaries. And finally, advanced educational applications have enhanced occupational mobility to the point that individuals can be trained and retained to a completely new job without leaving the comfort of their house.

VI. CONCLUSION and Policy Implication

Continuous and rapid growth of internet has created a large and easily accessible market for both employees and employers. It allows job seekers to search and find employment opportunities of their choice in their selected environments³³.

With literary minutes and without any major efforts a major list of job opportunities with detail information about the task, compensation, and the even the nature and philosophy of the management is provided to job seekers at no charge. Using virtual reality, the candidate physically walks through the corridors and offices of his future employer, meets all other employees and can visit his future office. He then negotiates his salary and perks, looks at the tasks and plan his first day at his new job³⁴.

It is very difficult, for job seekers to conceptualize the time that the only way of finding employment was to either go physically to the location and/or read the weekend newspapers. Under those circumstances, candidate was limited to the area he/she was working, the time he could have met someone in the organization, with very limited information about the job or the prospective employers.

The paper finds an association between higher levels of cultural capital (skills) and Internet access and job seeking.

It provides a unique analysis of the use of internet by four different categories of people to search for employment. The result indicates that married and single males and single females use internet efficiently and effectively as a tool to search for jobs. One explanation is perhaps the fact that they all are the primary source of income in the household. This element naturally forces them to learn the best, and most efficient, tools of income and financial survival. Additionally, being employed and working full time perhaps exposes them more to technology.

Contrary to this group, the research indicated that the differences in mean of the married females were significant. A natural explanation for this difference is a) - the fact that mothers are pre-occupied by children and housework therefore, time does not allow them to spend ample time on internet; and b)- not being the primary source of income for the family, they do not feel the urgency and requirement to be looking for jobs. There is the possibility that their time on internet might have spent on shopping, reading and/or simple surfing.

³³ Employment Job Searching Using the Internet
<http://gleez.com/articles/career-job-skills/employment-job-searching-using-the-internet>

³⁴ Ibid

The policy implication of this analysis is that internet plays an important role in search of employment among majority of our work force. Providing access to internet is essential for people to stay employed and constantly search for opportunities. As a part of job training or retraining the government can make the access easier and more affordable. The existing digital divide should be the issue for the lawmakers to pay attention to.

It is the opinion of the author, based on the findings of this research, that a renewed commitment to the development of community-based technology centers and ICT training for the unemployed is required, if disadvantaged job seekers are to reap the potential employability gains associated with the expansion of on-line services.

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